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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Kevin G. Mierzwa
Artz & Artz, P.C.
Suite 250
28333 Telegraph Road
Southfield, MI 48034

EXAMINER	
MEHRPOUR, NAGHMEH	
ART UNIT	**PAPER NUMBER**
2686	

DATE MAILED: 05/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/853,475	JUSTISS ET AL.	
	Examiner	Art Unit	
	Naghmeh Mehrpour	2686	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *12 November 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 7-8, are rejected under 35 U.S.C. 102(e) as being anticipated by Whight (US Publication 2001/0038670 A1).

Regarding claim 1, Whight teaches a method of digitally canceling interference on a received signal comprising adaptively canceling interference on the received signal using an interference reference feedback signal (see figure 2, page 2 section 0037).

Regarding claim 2, Whight teaches a method further comprising subtracting an counter-interference signal from the received signal to form a desired signal (see figure 2, page 2 section 0040).

Regarding claim 7, Whight teaches a method wherein said adaptively canceling interference farther comprises digitally and accurately replicating the interference (see figure 1, page 2 section 0040).

Regarding claim 8, Whight teaches a method further comprising simultaneously digitally canceling interference on a plurality of received signals (see figure 1, page 2 section 0040).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 9, is rejected under 35 U.S.C. 103(a) as being unpatentable over Whight US Publication 2001/0038670 A1) in view of Ushirokawa (US Patent Number 5,646,964).

Regarding claim 9, Whight fails to teach a method further comprising sequentially digitally canceling interference on a plurality of received signals. However Ushirokawa teaches a method further comprising sequentially digitally canceling interference on a plurality of received signals (col 18 lines 32-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the above teaching of Ushirokawa with Coiffi, in order to provide a receiver capable of satisfactory, operation for high-speed fading and multipath environments.

5. Claims 3-6, 10-13, are rejected under 35 U.S.C. 103(a) as being unpatentable over the Whight (US Publication Number 2001/0038670 A1), in view of Cioffi et al. (US Patent Number 5,995,567).

Regarding claim 3, Whight fails to teach a method further comprising digitally processing said desired signal to generate said feed back interference reference signal. However Cioffi teaches a method further comprising digitally processing said desired signal to generate said feed back interference reference signal(see figure 6, col 11 lines 43-62). Since the Whight and Cioffi both eliminating the RF noise, therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the above teaching of Coiffi with the Whight, in order to compensate and eliminate the radio frequency interference from a radio frequency source that undesirably interferes with reception of data being transmitted over the satellite payload.

Regarding claim 4, Whight teaches a method further comprising correlating said interference reference feedback signal to said desired signal to generate an error signal (see figure 2, page 2 section 0040).

Regarding claim 5, Whight teaches a method wherein adaptively canceling interference on the received signal farther comprising generating said counter-interference signal 24 based on said error signal to cancel said interference (see figure 2, page 2 section 0040).

Regarding claim 6, Whight teaches a method wherein adaptively canceling interference further comprises iteratively canceling interference on the received signal until said error signal equals zero (see figure 2, page 2 section 0040).

Regarding claim 10, Whight teaches a method of canceling interference comprising:

receiving a communication signal having interference 20(see figure 2, page 2 section 0040);

converting said communication signal into the received signal (see figure 2, page 2 section 0040);

a subtract or or subtracting a counter-interference signal from the received signal to form a desired signal (page 2 section 0040);

a correlator 153 correlating said interference reference feedback signal 159 to said desired signal to generate an error signal 26 (see figure 2, page 2 section 0040);

adaptively canceling interference on the received signal 155 based on said error signal 159 by generating said counter-interference signal to cancel said interference (see figure 2, page 2 section 0040). Whight of specification fails to teach a method of digitally canceling interference in a received signal within a satellite payload comprising:

digitally processing said desired signal to form an interference reference feedback signal. However Cioffi teaches digitally processing 506 desired signal to form an interference reference feedback signal VfD (col 11 lines 43-62). Since Whight and Cioffi both eliminating the RF noise, therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the above teaching of Coiffi with the Whight, in order to compensate and eliminate the radio frequency interference from a radio frequency source that undesirably interferes with reception of data being transmitted over a communication system.

Whight modified by Cioffi fails to teach the interference reduction method is with a satellite system. However Examiner takes official notice that system a method of reducing interference within a satellite communication system is well known in the art. therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the above teaching with Whight modified by Coiffi, in order to compensate and eliminate the radio frequency interference from a radio frequency source that undesirably interferes with reception of data being transmitted over a satellite system.

Regarding claim 11, Whight teaches a communication system (see figure 2) comprising:

a first antenna 137 for receiving a communication signal 131 (see figure 2, page 2 section 0037);

a feedback signal 155 path electrically coupling said output to said second input 135, said feedback signal 155 path transferring said interference reference feedback signal 155 from said output to said second input 155.

Whight fails to teach an analog-to-digital converter (ADC) electrically coupled to said first antenna, said ADC converting said communication signal to a received signal;

a satellite payload circuit comprising a first input, a second input, and an output, said first input is electrically coupled to said ADC;

said satellite payload circuit digitally processing said received signal to form an interference reference feedback signal.

However Cioffi teaches an analog-to-digital converter 604 (ADC) electrically coupled to said first antenna 106 (see figures 1, 6), said ADC 604 converting said communication signal 108 to a received signal 118/VfD;

a circuit 600 (see figure 6) comprising:

a first input 108, a second input 512, and an output 118, said first input 108 is electrically coupled to said ADC 604 (see figure 6, col 11 lines 51-57);

said digital processor circuit 600 digitally processing 506 said received signal 108 to form an interference reference feedback signal VfD (see figure 6, col 11 lines 36-40, lines 60-62). Since the Whight and Cioffi both eliminating the RF noise, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the above teaching of Coiffi with the Whight, in order to compensate and eliminate the radio frequency interference from a radio frequency source that undesirably interferes with reception of data being transmitted over a communication system.

Whight modified by Cioffi fails to teach the interference reduction method is within a satellite system. However Examiner takes official notice that system a method of reducing interference in a satellite communication system is well known in the art. therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the above teaching with Whight modified by Coiffi, in order to compensate and eliminate the radio frequency interference from a radio frequency source that undesirably interferes with reception of data being transmitted over a satellite system.

Regarding claim 12, Whight teaches a system wherein said communication circuit (see figure 2, section 0037) comprises:

a correlator 153 electrically coupled to a subtractor (161, summing junction), said correlator 153 comparing a interference reference feedback signal 155 to said desired signal to generate an error signal 159 (see figure 1, page 2 section 0005); and

a controller 151 electrically coupled to said correlator 24 and said subtractor 161 (summing junction((see figure 2, page 2 section 0040),

said controller 151 adaptively canceling interference on said received signal based on said error signal 2159 (see figure1 , page 2 section 0005).

Whight fails to teach a system wherein

a subtractor electrically coupled to said ADC, said subtractor subtracting a counter-interference signal from said received signal to form a desired signal;

a digital processor electrically coupled to said subtractor, said digital processor generating said interference reference feed back signal from said desired signal.

However Cioffi teaches a system (see figure 6)wherein:

a subtractor 602 electrically coupled to said ADC 604, said subtractor 602 subtracting a counter-interference signal from said received signal to form a desired signal;

a digital processor 506 electrically coupled to said subtractor 602, said digital processor generating said interference reference feed back

signal VfD from said desired signal 118. Since the Whight and Cioffi both eliminating the RF noise, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the above teaching of Coiffi with Whight, in order to compensate and eliminate the radio frequency interference from a radio frequency source that undesirably interferes with reception of data being transmitted over a communication system. Whight modified by Cioffi fails to teach the interference reduction method is within a satellite system. However Examiner takes official notice that system a method of reducing interference in a satellite communication system is well known in the art. therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the above teaching with Whight modified by Coiffi, in order to compensate and eliminate the radio frequency interference from a radio frequency source that undesirably interferes with reception of data being transmitted over a satellite system.

Regarding claim 13, Whight teaches a communication system (see figure 2, page 2 section 0040) comprising:

a first antenna 137 for receiving a communication signal 131 (see figure 2);

a correlator 153 electrically coupled to said summing junction 161, said correlator 153 comparing said interference reference signal 135 to said desired signal to generate an error signal 159 (see figure 2. page 2 section 0040); and

a controller 153 electrically coupled to said correlator 153 and said summing junction 161, said controller adaptively canceling interference 135 on said received signal based on said error signal 159 (see figure 2, page 2 sections 0037, 0040).

The Whight fails to teach that an analog-to-digital converter (ADC)electrically coupled to said first antenna, said ADC converting said communication signal to a received signal;

a subtractor electrically coupled to said ADC, said

subtractor subtracting a counter-interference signal from said received signal to form a desired signal;

a digital processor electrically coupled to said subtractor, said digital processor generating said interference reference feed back signal from said desired signal.

However Cioffi teaches removing the noise from received signals by adaptively estimating the radio frequency noise during data transmission when even no data has been transmitted (col 3 lines 27-32). Cioffi teaches an analog-to-digital converter 604 (ADC) electrically coupled to a first antenna 106 (see figure 1), and the ADC 604 converting said communication signal 108 to a received signal 118 (col 11 lines 46-63);

a subtractor 602 electrically coupled to said ADC 604, said

subtractor 602 subtracting a counter-interference signal 512 from said received signal 108 to form a desired signal 118 (see figure 6,col 11 lines 45-61);

a digital processor 506 electrically coupled to said subtractor 602, said digital processor 506 generating said interference reference 512 feed back signal from said desired signal 118 (see figure 6). Since Whight and Cioffi both eliminating the RF noise, therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the above teaching of Coiffi with Whight, in order to compensate and eliminate the radio frequency interference from a radio frequency source that undesirably interferes with reception of data being transmitted over the satellite payload.

Response to Arguments

6. Applicant's arguments filed 11/15/04 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e. use the error signal as the interference reference signal) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993), In addition In response to the applicant's argument that Whight does not use the error signal as the interference reference signal, examiner asserts that Whight teaching the error signal as the interference reference signal, by comparing the desire signal to the interference signal and capture the error signal and using the error signal as the reference interference signal to obtain the desire.

In response to the applicant's argument that nowhere Whight teaches the digital cancellation of interference. The Examiner asserts that Cioffi teaches a system (see figure 6) wherein a digital processor 506 electrically coupled to said subtractor 602, said digital processor generating said interference reference feed back signal VfD from said desired signal 118. Since the Whight and Cioffi both eliminating the RF noise, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the above teaching of Coiffi with Whight, in order to compensate and eliminate the radio frequency interference from a radio frequency source that undesirably interferes with reception of data being transmitted over a communication system.

In response to the applicant's argument that the desired signal of Cioffi is not an interference signal or an interference feedback signal, but used in conjunction with a interference signal to form a digital noise or interference signal. The desired signal does not form the interference reference signal. Nowhere in Cioffi is an interference reference feedback signal utilized. The Examiner asserts that Whight teaches a method of canceling interference on a received signal comprising adaptively canceling interference on the received signal using an interference reference feedback signal (see figure 2, page 2 section 0037). Further Whight teaches a method further comprising subtracting an counter-interference signal from the received signal to form a desired signal (see figure 2, page 2 section 0040), and Whight teaches a method wherein said adaptively canceling interference farther comprises digitally and accurately replicating the interference (see figure 1, page 2 section 0040). Cioffi teaches a system (see figure 6) wherein a digital processor 506 electrically coupled to said subtractor 602, said digital processor generating said interference reference feed back signal VfD from said desired signal 118. Since the Whight and Cioffi both eliminating the RF noise, therefore by combing the above teaching of Coiffi with Whight, compensates and eliminates the radio frequency interference from a radio frequency source that undesirably interferes with reception of data being transmitted over a communication system.

In response to the applicant's that Whight fails to teach a satellite payload circuit digitally processing the received signal to form an interference feedback signal and relies on Cioffi for such teaching, the examiner asserts that Whight teaches a communication system wherein a feedback signal 155 path electrically coupling said output to said second input 135, said feedback signal 155 path transferring said interference reference feedback signal 155 from said

output to said second input 155. Whight fails to teach a satellite payload circuit comprising a first input, a second input, and an output, said first input is electrically coupled to said ADC; the satellite payload circuit digitally processing said received signal to form an interference reference feedback signal. However Cioffi teaches said digital processor circuit 600 digitally processing 506 said received signal 108 to form an interference reference feedback signal VfD (see figure 6, col 11 lines 36-40, lines 60-62). Since the Whight and Cioffi both eliminating the RF noise, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the above teaching of Coiffi with the Whight, in order to compensate and eliminate the radio frequency interference from a radio frequency source that undesirably interferes with reception of data being transmitted over a communication system. Whight modified by Cioffi fails to teach the interference reduction method is within a satellite system. However Examiner takes official notice that system a method of reducing interference in a satellite communication system is well known in the art. Therefore by combing the above teaching with Whight modified by Coiffi, compensates and eliminates the radio frequency interference from a radio frequency source that undesirably interferes with reception of data being transmitted over a satellite system.

In response to applicant's argument that there is no suggestion to combine the references, and Whight fails to teach a communication system wherein an analog-to-digital converter (ADC)electrically coupled to said first antenna, said ADC converting said communication signal to a received signal; a subtractor electrically coupled to said ADC, said subtractor subtracting a counter-interference signal from said received signal to form a desired signal; a digital processor electrically coupled to said subtractor, said digital processor generating said interference

reference feed back signal from said desired signal, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case In response to the applicant's argument that Whight fails to teach a communication system wherein an analog-to-digital converter (ADC) electrically coupled to said first antenna, said ADC converting said communication signal to a received signal; a subtractor electrically coupled to said ADC, said subtractor subtracting a counter-interference signal from said received signal to form a desired signal; a digital processor electrically coupled to said subtractor, said digital processor generating said interference reference feed back signal from said desired signal. However, Cioffi teaches removing the noise from received signals by adaptively estimating the radio frequency noise during data transmission when even no data has been transmitted (col 3 lines 27-32). Cioffi teaches an analog-to-digital converter 604 (ADC) electrically coupled to a first antenna 106 (see figure 1), and the ADC 604 converting said communication signal 108 to a received signal 118 (col 11 lines 46-63); a subtractor 602 electrically coupled to said ADC 604, said subtractor 602 subtracting a counter-interference signal 512 from said received signal 108 to form a desired signal 118 (see figure 6,col 11 lines 45-61); a digital processor 506 electrically coupled to said subtractor 602, said digital processor 506 generating said interference reference 512 feed back signal from said desired signal 118 (see figure 6). Since Whight and Cioffi both eliminating the RF noise, therefore, by combing the above teaching of Coiffi with Whight, data reception being

transmitted over the satellite payload and compensates and eliminates the radio frequency interference from a radio frequency source that undesirably interferes.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Whight fails to teach a method further comprising sequentially digitally canceling interference on a plurality of received signals. However Ushirokawa teaches a method further comprising sequentially digitally canceling interference on a plurality of received signals (col 18 lines 32-35). therefore, by combing the above teaching of Ushirokawa with Coiffi, the combined system provides a receiver capable of satisfactory, operation for high-speed fading and multipath environments.

Conclusion

7. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. **Any responses to this action should be mailed to:**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Naghmeh Mehrpour whose telephone number is 703-308-7159. The examiner can normally be reached on 8:00- 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid be reached on (703) 306-3061.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NM

Marsha D. Banks-Harold

MARSHA D. BANKS-HAROLD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

May 13, 2005